

Zero Retries issue 0210 2025-07-11

Zero Retries is an independent newsletter promoting technological innovation in and adjacent to Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Radios are computers - with antennas! Now in its fifth year of publication, with 2800+ subscribers.

About Zero Retries

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Request To Send

Commentary by Editor Steve Stroh N8GNJ

Paid Subscribers Update

My thanks to **Prefers to Remain Anonymous 77** for becoming a *new* **Founding Member Subscriber 0016** to Zero Retries this past week!

Founding Member Subscribers are listed in every issue of Zero Retries!

My thanks to **Prefers to Remain Anonymous 05** for *renewing* as an **Annual Paid Subscriber** to Zero Retries this past week!

Financial support from Zero Retries readers is a significant vote of support for the continued publication of Zero Retries.

###

The Zero Retries Virtual Intern - ChatGPT Plus

I almost started this sentence by saying “Like everyone...” but that wouldn’t be accurate. Lots of people in my circles aren’t making *any* use of the many AI tools that are available. What AI can do right now just isn’t that relevant to their lives - at the moment.

But that dichotomy of those using AI versus not using AI feels like other “tech divides” I’ve experienced in my lifetime such as my early adopter usage of Bulletin Board Systems, then TCP/IP networking (in Amateur Radio), Internet email, and Internet access when most people weren’t doing so.

For those of us that write, and do research, the available AI tools are growing steadily more useful. That oft-repeated quote about “Today, AI is the worst it’s ever going to be” feels very true. I’ve recently begun using Chat GPT *Plus* (Thank You Zero Retries Paid Subscribers!) when I read that when using the free version of ChatGPT, not only is there a limitation of number of queries per day, but the responses you’re getting from ChatGPT are from an older version of ChatGPT that’s more economical for OpenAI to operate. Thus the responses are... useful... but not great. Both of those limitations are understandable given that free usage is a significant expense.

ChatGPT Plus gives you access to better, more sophisticated AI models and those models “dig a little deeper” when you are doing research. I’ve read that Anthropic’s Claude is also good, and I’ve begun checking it out.

Thus I’m beginning to make productive use of AI, and I think it’s at least as usable as a virtual intern in tasking it with mundane tasks and research that I could do myself, but would be time consuming. Instead of taking a few minutes to look up the time difference between a city in Europe and Bellingham, I just asked ChatGPT Plus, and it gave me a good answer. Time saved!

The trick with getting useful results from AI is to both describe the boundaries of your query (what to exclude) and mention any useful references that you know of. I’ve experimented enough with AI to feel confident that by the end of Summer 2025, I’ll have developed some useful “products” from four full years of weekly Zero Retries issues.

But rest assured, I won’t be using AI to write Zero Retries. That’s a privilege / task I’m reserving for myself.

###

[**Zero Retries Store - Last Chance - COMCO 814 PORTACOM Radio \(2 units\)**](#)



Image courtesy of Tina Stroh KD7WSF / Zero Retries Store

From the N8GNJ Lab, these are portable units operating on 43 MHz. They're almost certainly crystal controlled. They can be "toted" (weigh several pounds), have a handle, have a connected telescoping whip antenna, and an external microphone (only one microphone).

On the rear, there is an external antenna connector and a 9-pin DSUB socket.

They're very sturdy and well-made, pretty retro-cool, and probably rare (could only find references to the manufacturer, COMCO, in Miami, Florida).

Not tested or warranted for function - sale is final.

The N8GNJ / Zero Retries Labs surplus items in the [Zero Retries Store](#) are languishing, and there's no point in them remaining in indefinite storage given that I've made a decision that these items are no longer slated for a future project. I thought it would be fun to allow early access to these items to Zero Retries readers, thus I'll be featuring these units *one last time* in subsequent issues of Zero Retries.

This week's Featured Item from the Zero Retries store is two COMCO 814 PORTACOM Radios. These two units were gifted to me from the estate of a friend who is a Silent Keyboard. I imagined converting these to a more usable configuration, gutting out the internals to accommodate a more modern radio, such as a Software Defined Receiver, with a built-in battery power supply, to be used with a laptop. I imagined swapping out the microphone connector with a 3D printed adapter for a USB connector, and the rear circular connector with a 3D printed adapter for an Anderson PowerPole power connector. But that project is now way down in the queue of projects in N8GNJ / Zero Retries Labs. Thus I decided this particular project was below the "likely to get done" cutoff.

One of the benefits of these units is that there's a *pair* of them, so you could share this project with a friend. They're designed for toting around, with an

integral whip antenna and an internal battery (by the weight and the vintage, probably Sealed Lead Acid). Unfortunately I have no documentation on these units, nor was I able to find any online. The value that they have is they are “retro cool” and suitable for a cool conversion to... ??? They're heavy duty, apparently there's ample room for an internal battery (a Li-Ion battery would decrease the weight considerably), and there's a DSUB-9F connector for external access (but with a conversion, there's probably ample internal room for a modem). There is *one* microphone for the pair.

~~Going once...~~ *going twice*, and by Friday 2025-07-18 *gone from the Zero Retries store* - to one of you Zero Retries readers, or to the eBay pile to be ignominiously sold off to someone... or if they don't find a home on eBay, to my electronic disposal of choice - [REPC](#).

If you'd like more details, please email store@zeroretires.net.

#

Weekends Are For Amateur Radio!

It's sunny and fair once again in Bellingham, so the four rollup doors of N8GNJ / Zero Retries Labs will be wide open and thus some project time will ensue once I get the bench and radio desk cleared of accumulated detritus from the past few weeks.

Have a great weekend, all of you co-conspirators in Zero Retries Interesting Amateur Radio activities!

Steve N8GNJ

Leave a comment

Share

Zero Retries Enters Its Fifth Year

By Tina Stroh KD7WSF

As Zero Retries begins its fifth year, Steve asked me to write my views of Zero Retries. Like Steve, I am a person with endless words but I will give this my best shot.

When I think of Zero Retries, I think back to the beginning of Steve's writing career. Steve used to receive the magazine *Boardwatch*. When it arrived, he would disappear for a few hours. He made the comment to the Editor, Jack Rickard, that there should be a wireless column. Soon afterwards, Steve started writing a monthly column for Boardwatch. We went to our first conference in San Francisco in 1997. I remember buying new outfits so that I would look good. After all, I was the proud wife of a columnist.

As his readership increased, Steve started writing for more publications like CQ, TAPR Packet Status Register and for various organizations like IEEE. His readership increased dramatically and once said, it's ironic, I can't join IEEE but I can write for their magazine. It always amazed me that he could write such high technical level articles without having any formal education in journalism. At the Boardwatch conference, I was sitting in one of the hospitality suites with about five men, including Steve, all immersed in conversation. They were so occupied, they never heard the knock on the door. I answered the door and invited the man in. I started making small talk with him and offered him a drink and some appetizers. He asked how I was related to the group and I mentioned Steve was a columnist for Boardwatch. This man, Dr. Ted Nelson, acknowledged that he had read Steve's articles and wanted to meet him. We moved over to the group and introduced him to Steve and the group. All their mouths dropped open and were speechless. I saw this as my opportunity to zip out and I left. Steve comes back to the hotel room around 0200. Think I was mad? I asked what he had been up to and he told me he had been talking to Ted Nelson all this time. Then he told me all about Ted Nelson (<http://www.thetednelson.com/>). I was duly impressed that a man of his accomplishments was reading my husband's work. Yet another proud moment.

In 1996, at the TAPR/ARRL Digital Communications Conference (DCC) here in Seattle, Steve learned and started following the Wireless industry. At the conference, I met so many HAMS like Phil Karn KA9Q, Bdale Garbee KBOG, and Steve Bible N7HPR. I truly felt like I was on a different planet. Steve and Dwayne Hendricks WA8DZP talked a lot about wireless communications. Next thing I knew, Steve was off to wireless conferences such as ISPCON and WISPAPALOOZA. I went with Steve to one conference in San Jose where I met a lot of the industry leaders. At a reception, Steve introduced me to Marty Cooper. Steve got pulled away and Marty turned to me and said “I just love the stuff he writes, he writes so well and so that everyone can understand the technology”. I became overwhelmed with pride and remembered trying hard not to cry. Later, I asked Steve about Marty's background. Steve looked at me and just said, “ever hear of the cell phone”, that was Marty's invention (<https://www.britannica.com/biography/Martin-Cooper>). That's when I cried!

After the 2000 Dot Com crash, Steve took a break from writing as many of the publications he wrote for had folded. During his wireless days, Steve never stopped being a HAM. I finally decided to make good on my promise that I made shortly after we got married (we called it the campaign promise) to become a HAM. Although I was happy to be Mrs. N8GNJ, I felt it was time especially after the code requirement was dropped. Every Saturday morning, the local group of HAMS would get together. They all encouraged me on my quest and kept giving me books and websites to look at. I finally got up my courage and took the test, passed and became KD7WSF.

After a seven year stretch at what Steve called his “day job”, downsizing our home in Woodinville, WA, and moving to Bellingham, WA, he made the choice to start writing again. I think this time with more passion for amateur radio. To qualify this, he always had the passion for amateur radio, but it bothered him that stories weren't being told about the technology advances that were being made. If I could have made a bet on all the predictions he has made over the past 41 years of our marriage, I would be a very wealthy woman. So, in 2021, he started *Zero Retries* to fill that void he thought was missing in amateur radio. After I officially retired in 2024, I stepped in to help with the business end of things.

Now that Steve is starting his fifth year of publishing, to say I am proud is a gross understatement. He went from one reader (me) in 2020 to over 2800 in 2025. Through very thoughtful and kind donations, Zero Retries is well on its way to covering its own costs and not relying on a steady stream from our 401 funds. We are finally at the point to act on our dream of hosting our own conference about digital communications and some of the technological innovations happening in amateur radio. It is our hope the Zero Retries Digital Conference or ZRDC will be as enlightening to some or as illuminating / informative to others. As we move forward, I know that Steve will continue to embrace the words of Carl Sagan, “somewhere, something incredible is waiting to be known” and he will be writing about it.

Editor's Note - In this article, Tina downplays her role in the success of Zero Retries. My earlier writing career was, to be polite, “didn't pan out”. My

becoming a writer happened mostly by accident and I never developed the financial skills that are necessary for freelance writers to succeed long term. Thus when I talked to Tina about starting to write again - Zero Retries using Substack, she was understandably cautious. We made a deal that this new "writing gig" wouldn't cost us too much money, and would eventually have to pay its way. Thanks to the many generous paid subscribers, it has done so. Tina agreed to become the Business Manager for Zero Retries which allows me to focus on writing Zero Retries. In our latest leap of faith, the Zero Retries Digital Conference, Tina has agreed to assume the additional role as Conference Manager. As I say in every issue of Zero Retries:

My ongoing Thanks to: Tina Stroh KD7WSF for, well, everything!

It's the literal truth that Zero Retries *would not exist* if it were not for Tina's ongoing support and encouragement to me. Through thick, and thin, sickness and health, bad moods and better moods, and especially some long days at the keyboard deferring household chores ...

Tina's encouragement for me to continue to write Zero Retries every week has been unfailing. And I am humbled, and incredibly grateful for such amazing support.

Leave a comment

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What's New at Digital Library of Amateur Radio & Communications — Packet Radio History

By Kay Savetz K6KJN
Program Manager, Special Collections
Internet Archive, Digital Library of Amateur Radio & Communications

I've got huge news for fans of packet radio and packet radio historians: in the last month, the DLARC library has digitized reams of historical documents detailing the birth of packet radio specs, software, and hardware.

Last month I announced the addition of the [Packet Radio History collection](#). Today I'm thrilled to announce two sub-collections within it: [Packet Radio Temporary Notes](#) and [ALOHAnet](#).

Packet Radio Temporary Notes (PRTNs) were a series of informal technical documents distributed from 1972 through 1983 by the organizations that were creating packet radio. Their purpose was to share research, experimentation, and development progress related to packet radio. There were, depending on how you count them, about 309 PRTNs published over that time span. The organizations involved included DARPA (Defense Advanced Research Projects Agency), Bolt Beranek and Newman (BBN), Network Analysis Corporation, Rockwell International, SRI International, Stanford University, University of California Los Angeles (UCLA), University of Hawaii, and Xerox PARC (Palo Alto Research Center).

These documents' distribution was limited to people who requested them. So they weren't secret by any means, but it took some effort to get them as they were released, and as a result it is taking a whole lot of effort to gather them now. In the [Report on the Packet Radio Group Meeting of 8-9 November 1973](#),

Dr. Bob Kahn "indicated that it was yet too early to put out formal publications... He indicated as a ground rule that permanent packet radio notes will be available to people who request them. This means that we give these notes out on request. But he does not want to get into a full-scale publication effort at this time." And that's the way it continued for a decade.

This is a very long windup to the pitch: [DLARC has found and digitized more than 120 PRTN documents](#), primarily the earliest of them, released 1972 through 1976.

I encourage you to [browse the PRTN collection](#) to see what we've got. It might be hard at first glance to get excited by titles like [PRTN 28: R.F. Channel Capacity Considerations](#) or [PRTN 55: Combinatorial Aspects of Message Flow in Packet Radio Nets](#) or [PRTN 98: Modulation Waveform Types](#), but it is exciting to look over the shoulders of the people who were working together to invent packet radio communications. It is exciting that these documents are available to the general public, to researchers and hobbyists for the first time. Also: The collection includes some [draft documents](#) that apparently didn't make it to final PRTN status.

I harvested the PRTN documents over the course of weeks from several sources. Most came to DLARC via Robert Garner, who has documents originally collected by David Wax, who was active in the development of packet radio and [wrote some of the PRTNs](#). Others came from UCLA Library and the Defense Technical Information Center.

I've found a bunch of documents that maybe should have been distributed as PRTNs but (for unknown reasons) weren't. For instance, the Report on the Second Meeting of the [ARPA Packet Radio Group at Collins Radio, January 22-23, 1973](#); and [James C. Garrett's Baseline Definition of Packet Radio Network \(Revision 0\)](#). He also wrote the [Packet Radio Repeater Design Plan, Preliminary Specifications 1.10](#) — which is a precursor to [Packet Radio Experimental Repeater, Technical Plan, Quarterly Report](#). Like I said, it's watching as the technology gets hashed out and invented.

But! We're still a long way from having a complete collection of PRTN documents. I've updated the [DLARC Wantlist](#) with the ones that we need: a smattering from #2 ("Procedures for Distributing Packet Radio Temporary Notes") through #178 ("Packet Radio Protocol Program") and pretty much every note from #180 ("Cross-Radio Debugger" by Michael Beeler) through #326 ("User's Guide for Data Reduction and Analysis" by DesMarais.) I have FOIA requests pending and other queries out there, but they can take a long time. If you have some of these docs in any format, let me know.

We've also added the [ALOHAnet](#) collection (much smaller, still growing). Developed at the University of Hawaii in 1971, ALOHAnet was a pioneering wireless packet networking system that introduced the concept of random access protocols, allowing multiple devices to transmit data over a shared frequency channel without a central controller. Bob Kahn [said](#), "The ALOHA system was to packet radio like the original timesharing computer was to Arpanet."

The company that was called Bolt Beranek and Newman is now called RTX Corporation. When I asked Penny Steele-Perkins, RTX's research librarian, about PRTNs, she uncovered a bunch of *other* documents related to packet radio that had (as far as we can tell) never been released to the public. One of them is the 1982 file [BBN REPORT-5675: Packet Radio Network Final Report](#). "This report describes the work accomplished under contract MDA 903-80-C-0206, which covered the last three years of the Packet Radio program. Over the past ten years, BBN has taken a leading role in the development of Packet Radio technology. In fulfilling this role we became the system architects of the Packet Radio program, creating the Tier and Multistation designs as well as several of their predecessors. At a more local level, we designed SPP, the reliable end-to-end protocol used within the network, and we have

significantly contributed to the development of the TCP protocol used for Internet traffic.”

Steele-Perkins also surfaced [a bunch of other “new old” documents](#), primarily quarterly progress reports as they did their work in the new world of digital communications.

One last batch of packet radio things: Tom McDermott N5EG sent several floppy disks of TEXNET software. TEXNET was a project of the [Texas Packet Radio Society](#): a digital packet network protocol with a standard hardware package for network nodes, to create an open, high speed backbone with access through multi-connect capable local nodes. Thanks to Tom, DLARC now has [versions 1.74](#) and [1.75](#) of the TEXNET Z-80 assembly source code, and the C source code for the [V.29 Wireline Modem](#). (He told me: “Qwest donated some 4-wire E&M circuits to TPRS that we used to build out the network to difficult places (e.g. west Texas). We used surplus commercial V.29 modems, but all 50 failed. So I designed the hardware and Tom Aschenbrenner the software for our own V.29 modems based on a Rockwell DSP FAX Modem IC.”)

Finally, he sent the [source code](#) for the TAPR DSP-93 Digital Signal Processor, to make that hardware work as a digital sampling function generator, oscilloscope, and spectrum analyzer under Windows.

We’ve added plenty of non-packet radio material to DLARC this month as well. (For instance, check out [issue 2 of SWR](#), the impressive new magazine-newsletter from the Caribbean Amateur Radio Group.) You’re always invited to [see DLARC’s newest additions at this URL](#), or track additions by [feeding this URL to your RSS reader](#).

Digital Library of Amateur Radio & Communications is funded by a generous grant from Amateur Radio Digital Communications ([ARDC](#)) to create a free digital library for the radio community, researchers, educators, and students. If you have questions about the project or material to contribute, contact me at kay@archive.org.

#

Editor’s Note - I’ve known that the Packet Radio Temporary Notes and ALOHAnet sub collections were in development in DLARC, but Kay asked me not to say anything as the material was only beginning to trickle in. *Kay put a tremendous amount of work into this*, the kind of work only a trained archivist knows how to do, such as filing Freedom of Information Act requests, etc.

If this seems of little interest, perhaps some context would help. As ALOHAnet was being developed... it predated cheap(er) computers. This was the early 1970s; the “cheap” MITS Altair *micro*computer didn’t debut until January 1975, and it was hardly practical to use for data communications at that time. Thus all computing for ALOHAnet had to be done on *minicomputers*. And modems were mostly analog back then - certainly radio modems. Amateur Radio data communications was largely RTTY, so the idea of transmitting computer data over radio was really radical at the time. And, not only did ALOHAnet predate Ethernet, it directly inspired the creation of Ethernet.

Thus the ALOHAnet creators had to be very creative in their approaches to data communications via radio. They couldn’t “just throw cheap computer power at the problem”, as we can do today. I’m sure there are lessons to be learned in this material from fifty years ago. I’m imagining that the ALOHAnet developers tried creative approaches which turned out not to be practical then, but are practical now with high speed Analog to Digital (A/D) and Digital to Analog (D/A) Converters and very cheap and very powerful computing power.

I’m looking forward to reading through these ALOHAnet archives in the coming months.

Leave a comment

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Comment Period Open for Ten More Days re: AST SpaceMobile Claiming 430-440 MHz For Its Use

By Steve Stroh N8GNJ

References:

- AST SpaceMobile Lays Claim to 430-440 MHz and 902-928 MHz for Commercial Satellite Communications in FCC Filing.
- [Use of 430-440 MHz by AST SpaceMobile constellation](#)
- [NTIA 420-450 MHz Paper](#)

As this issue of Zero Retries is distributed on Friday, July 11, 2025, only ten days remain in the comment period of [FCC DA 25-532](#) (PDF). Comments are due by July 21, 2025. Reply comments are due August 5, 2025.

With the references above, those of us concerned about this undeclared, de facto usage of Amateur Radio’s secondary allocation (in the US) of 430-440 MHz, I recommend filing concerned your own comments from your perspective.

One thing to note is that 430-440 MHz is used for a variety of Amateur Radio uses, not just space communications. Examples include (wideband) digital television, data communications, point-to-point links, auxiliary linking and control for repeaters and other systems, and many other usages that are not necessarily listed in formal allocations or voluntary band plans.

Two last notes:

- When composing comments to the FCC, I’ve been told that the terminology “The Commission” is preferred to the terminology “FCC”.
- Be sure to include that you’re an Amateur Radio Operator with your callsign. This establishes that you have some reasonable standing to comment on this issue.

To see comments filed to date:

- [FCC Electronic Comment Filing System - SEARCH.](#)
- In the **Proceeding(s)** field, type:
25-201
- A pop up will appear:
25-201 SPACE BUREAU ACCEPTS FOR FILING AST & SCIENCE, LLC MODIFICATION APPLICATION
- Click on that.
- 25-201 will appear in the **Proceeding(s)** field.
- Scroll down and click on the big blue **SEARCH** button.

To File Your Own Comments - You've Composed a Document:

- [FCC Electronic Comment Filing System - FILING - Standard Filing.](#)
- In the **Proceeding(s)** field, type:
25-201
- A pop up will appear:
25-201 SPACE BUREAU ACCEPTS FOR FILING AST & SCIENCE, LLC MODIFICATION APPLICATION
- Click on that.
- **Law Firm(s)** field can be ignored
- **File Number** field can be ignored
- **Report** Number field can be ignored
- **Bureau ID** Number field can be ignored
- Fill in all the applicable blanks. *Solely in my opinion, including an address makes the comment more...or at all...credible.*

To File Your Own Comments - Express (Fill in the Blanks):

- [FCC Electronic Comment Filing System - FILING - Express Comment.](#)
- In the **Proceeding(s)** field, type:
25-201
- A pop up will appear:
25-201 SPACE BUREAU ACCEPTS FOR FILING AST & SCIENCE, LLC MODIFICATION APPLICATION
- Click on that.
- Fill in all the applicable blanks. *Solely in my opinion, including an address makes the comment more...or at all...credible.*

I'm still working on my comments, to be filed as a document.

I'll discuss this issue more in Zero Retries 0211 next week - 2025-07-18, just barely within the comment window.

Leave a comment

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Year Five of the Zero Retries Experiment In Progress

By Steve Stroh N8GNJ

I'm not being modest or flippant in the title. Zero Retries really is an ongoing experiment in progress. Some publications span decades, thus by that metric, Zero Retries has barely gotten started.

I promised some extended thoughts on what's ahead in the next year in this issue that begins Year Five of Zero Retries. But in planning that, I'd forgotten about the looming FCC comment deadline - see the preceding article. That soaked up some time that I otherwise would have spent on this article. I still plan to do a big "thinking ahead about the coming year" article in a near future issue. But here are some brief thoughts.

Zero Retries Plays For "Those Five"

I have shared this story with each new Founding and Paid Subscriber as it's most applicable to them in financially supporting Zero Retries, but in beginning Year Five of Zero Retries, it seems appropriate to share this story a bit more widely.

One of my "virtual mentors" in becoming a writer and starting Zero Retries is the late microcomputer pioneer and author [Don Lancaster](#). One of the most profound things (to me) that Lancaster has ever written was this [brief passage](#) that he only mentioned a few times:

Many years ago, I was at a rock concert. The opening act was a single flute player standing solo in front of the closed stage curtains. His job

was to warm up the audience for the high priced talent that was to follow. He was good.

But as he went along, the musical vibes got stranger and stranger, then totally bizarre. He was playing **chords** on his flute. Combined with utterly unbelievable riffs. Much of the audience got impatient and bored at what seemed like a bunch of gawd-awful squawks.

Then I happened to notice a friend beside me who had both been in and taught concert band. He was literally on the edge of his seat. He turned to me and slowly said “**you ...can’t...do...that...with...a...flute**”.

Of the thousands and thousands of people in the theater audience, at most only five realized they were witnessing a once-in-a-lifetime performance of the absolute mastery of a difficult and demanding instrument.

Always play for those five.

This passage just resonated with me, and in starting Zero Retries, I decided that I wouldn’t attempt to write Zero Retries for a mass audience. Rather, I would embrace Lancaster’s advice and write for “those five” that shared my enthusiasm for technological innovation in Amateur Radio and the role that Amateur Radio can play in advancing technological progress by exposing people to hands-on radio technology and potentially influencing young people into careers involving radio technology. We need them *now*, and we’re going to need a *lot of them* in the future. Hopefully Zero Retries can help do so, at least in a small way.

Thus I write Zero Retries for “those five”, and I’m humbled that there are *a very few of you* who choose to be paid subscribers to indicate your support for what I’m doing in Zero Retries.

#

Those of us in the Zero Retries Community (*and we are a community* - more on that very soon) are a niche (techies) of a niche (Amateur Radio) of a niche (Zero Retries Interesting topics). There are many other venues that address tech, and others that discuss Amateur Radio in general. But there are only a very few places (Zero Retries isn’t completely alone) that attempt to discuss Zero Retries Interesting topics. Thus I deliberately write for “us” - the 3,000 or so that are *doing Zero Retries Interesting things*, follow Zero Retries, and comment, write guest articles, suggest topics, and generally keep things interesting.

Amateur Radio VHF / UHF Bands “Sharing” Will Continue

Amateur Radio’s “traditional” use of its various VHF and UHF bands will be increasingly targeted by commercial companies. In addition to this latest “sharing proposal” by AST SpaceMobile...

- Amateur Radio and unlicensed use of 902-928 MHz (33 cm band) is still being considered within the FCC for radical change proposed by NextNav.
- Amateur Radio use of 1240-1300 MHz (23 cm band) will soon be curtailed as more and more Global Navigation Satellite System (GNSS) satellites come online such as Europe’s Galileo and China’s BeiDou.
- There’s precedent for 420-430 MHz to be removed from use by Amateur Radio. That’s the case in Canada, and to minimize potential interference by Amateur Radio operations in 420-430 MHz, if you’re a US Amateur Radio Operator that’s located North of Line A, you cannot use 420-430 MHz. My thanks to (*Zero Retries Founding Member 0002*) Chris Osburn KD7DVD for a handy guide of where Line A actually is here in Washington - [Line A through Washington State](#). As we can see with AST SpaceMobile, it wouldn’t be much of a stretch for commercial users to want to extend the exclusion of Amateur Radio in 420-430 MHz to the rest of the US.

These kinds of “we can coexist with the Hams in their spectrum” attempts are going to become the norm.

Amateur Radio Needs New Organizations

The “spectrum sharing” issue points out that Amateur Radio, in this era, is sadly lacking in several primary areas.

Now that we’re a “smaller world” being quickly brought together with much better language translation via AI, cheap worldwide communication via Internet, and now common issues of spectrum use including HF and VHF / UHF despite international boundaries and even separation by oceans and thousands of miles, there are many common issues.

Threats / Regulatory Reform Organization

A primary need for a new organization in this era is an organization that monitors “threats” to Amateur Radio and can react to them by mobilizing Amateur Radio Operators, and groups, to respond to such issues. Yes, there is the [IARU](#), but it doesn’t attempt to reach out to individual Amateur Radio Operators, or even individual countries.

A co-primary mission of this organization would be to advocate for regulatory changes from a global perspective. For example, Canada has much more enlightened Amateur Radio regulations than the US does, and Canada’s regulations should be studied and offered as a major discussion point in potential regulatory reform for US Amateur Radio regulations.

Advocacy Organization

There’s a need for an organization that doesn’t just speak *to* Amateur Radio... it needs to speak on behalf of Amateur Radio. I suspect that most of us feel the absence of such an organization in our everyday dealings with those who aren’t Amateur Radio Operators.

Future / Future Systems Organization

I credit Zero Retries Pseudostaffer Steve Lampereur KB9MWR with this idea from a brief mention in a blog post - [Meshtastic](#):

I have written the ARRL about the concept of bringing back the future systems committee...

Yes, the ARRL once had a committee that actively thought about not just the future of Amateur Radio in general, but Amateur Radio *systems* of the future. You can’t always get “predictions” right... but that doesn’t mean you shouldn’t try.

Amateur Radio needs a Future / Future Systems Organization, but not confined to a single organization such as the ARRL, or a single country.

Standards (Tracking) Organization

There's a humorous quote about the nice thing about standards is that there are so many of them. That's especially true in Amateur Radio where experimentation is encouraged, even to the point of creating standards with an audience of one. Thus it's a fool's errand to try to encourage adherence to "a" standard unless that's desired for interoperability.

But what is needed, desperately in my opinion, is an organization that tracks various standards as they're developed, and offers a unified way to *find* various standards so that "solved problems" don't end up as multiple "*re*-solved problems".

Just one example... is there a unified place to find all the various types of telemetry modulations that are used in experimental Amateur Radio satellites?

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ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

[Hamshack Hotline Public Announcement – A Fond Farewell](#)

Lead article on their website, and posts on Facebook and elsewhere:

To our valued Hamshack Hotline community,

It is with a heavy heart that we announce the sunset of the Hamshack Hotline project, effective **August 29th, 2025**.

What began in 2018 as a simple idea in the humble closet of K1WIZ quickly grew into something none of us could have imagined—an expansive, global communications network built by and for amateur radio operators. From those early beginnings, Hamshack Hotline evolved into a robust VoIP system supported by multiple servers around the world, with **over 7,000 interconnections** at its peak.

This incredible journey was made possible by the **generosity of donors worldwide** and the tireless commitment of the **Hamshack Hotline Team**, who volunteered their time and expertise to support and grow the network. Your trust and participation helped shape Hamshack Hotline into a valuable and widely respected resource for the ham radio community.

However, with success came scale—and with scale, came increasing demands. As the network grew, so did the workload on our small team. Balancing this effort with our responsibilities to **family, careers, and life outside the shack** has become increasingly challenging. We've always taken great pride in the reliability and service standards of Hamshack Hotline, and we recognize that we can no longer maintain those standards at the level our users deserve.

After much thoughtful discussion and reflection, the **Board of Directors has unanimously voted to sunset the project**, giving our community ample time to transition to other services by the end date.

This was not an easy decision. We know how much this network means to many of you—and it means just as much to us. Hamshack Hotline was built with love, run with dedication, and supported by an incredible community that made it all worthwhile.

In the spirit of giving back, **the remaining cash reserves** of Hamshack Hotline, after settling final operating expenses, **will be donated to a charity that supports veterans**. We'll announce the recipient of this donation soon.

From the bottom of our hearts, we thank each and every one of you for being a part of Hamshack Hotline. Whether you joined us on day one or just discovered the network, your involvement helped shape something truly special in the amateur radio world.

73,

The Hamshack Hotline Team

"Where Hams Connect" – 2018–2025

I had a brief email conversation about this and the other person said it was a shame that Hamshack Hotline couldn't be acquired by someone else.

*In the following comments, I have no inside information on Hamshack Hotline's announced decision. **None**.*

From my perspective, the decision to sunset Hamshack Hotline is probably a good one. As someone who's been on the inside of transitions of significant computer / network services and systems that have been successfully transitioned... and not so successfully transitioned, doing so is really, *really* hard. It doesn't matter how long, how intensely you plan, something inevitably goes wrong. And then the original team is on the hook for months of support even though the terms of the transition were that the acquiring team "owns" the service / system. And the customers of the service / system are mad at both the original and the acquiring teams for service issues that simply could not have been foreseen.

Then... *imagine that scenario* for a hobby / non-business service like Hamshack Hotline.

Fortunately, there are other, similar services for Amateur Radio. As I wrote in **Zero Retries 0191** - Hamshack Hotline Isn't the Only Amateur Radio VOIP Service:

AmateurWire -

<https://amateurwire.org>

Welcome to AmateurWire.org the home of the AmateurWire VOIP Service. If you are not already registered come join us. Our service works with desktop IP phones, Softphones on PC, MAC and Smart Phones. You don't have to have an IP phone to use our services.

I also offer some other services such as email addresses from the AmateurWire.org domain so if you would like YOURCALL@AmateurWire.org for an email address once you have registered just submit a support ticket and we can get you set up.

Hams Over IP -

<https://hamsoverip.com>

Ham Radio Operators from all over the world have volunteered their time, skills, and resources to create a new and dynamic Ham Radio voice over IP service for our ham radio community.

FEATURES

- Fully featured, searchable, BLF integrated phonebook
- Up to TEN endpoints per extension
- IAX Trunks, SIP Trunks
- Conference Bridges for Individuals, Clubs and Groups

###

[Twitter Co-founder Jack Dorsey's New Messaging App Works Without the Internet](#)

Abhimanyu Ghoshal writing for New Atlas:

Jack Dorsey, most famous for co-founding Twitter (now X) all the way back in 2006, is cooking up a different way to connect people. It's a peer-to-peer mesh-network-based messaging app that lets you chat with people over Bluetooth, no internet access required.

Dorsey said on X that he put together a basic version of the app, called Bitchat, over the past weekend as a way to learn about a bundle of technologies that power mesh-based services. The big deal here is that Bitchat is completely decentralized, with no servers to store messages.

Bennett Kobb AK4AV pointed me to the [Bitchat whitepaper](#) on the Github repository which much more technical detail. This section in particular was interesting:

Future Performance Enhancements

WiFi Direct Transport

A planned enhancement will add WiFi Direct as an alternative transport layer:

- **100x bandwidth:** 250+ Mbps vs BLE's 1-3 Mbps
- **Extended range:** 100-200m vs BLE's 10-30m
- **Automatic handoff:** Seamlessly switch between BLE and WiFi Direct
- **Hybrid mesh:** Some nodes BLE-only, others WiFi-capable
- **Battery-aware:** Only activate for large transfers or when charging

Alternative Transports

Future transport options being considered:

- **Ultrasonic Communication:** 1-10 kbps through air, works when radio is jammed
- **LoRa (Long Range):** 2-15km range for disaster scenarios
- **Transport bonding:** Use multiple simultaneously for redundancy

It will be interesting to see how practical Bitchat will be in real world usage. Some issues I can imagine:

- How many nodes can be cached for being able to participate in a mesh to be able to relay?
- How long can a message be cached as "not yet able to deliver or forward" before it's deleted as undeliverable?
- How practical is all this extra activity as a hit to battery life on a mobile device?

If the creators / contributors to Bitchat really want to get creative and embrace alternative transport mechanisms for as much redundancy as possible, if it were me, I would integrate [Rabbit](#) technology for being able to transmit data over nearly any voice two way radio system. In a crowd scenario, it's easy to shut down cellular networks, and it's easy to shut down Wi-Fi (2.4 / 5.x / 6.x GHz) use, but not so easy to shut down VHF / UHF communications as that's what the "authorities" use for *their* communications. And, resilient communications now includes Starlink given that it's now possible for a Starlink Mini terminal to be transported in a backpack and powered with battery units that can also be carried in a backpack.

I'll guess that someone is going to "fork" this project into a next generation version of Meshtastic. For example, use your mobile device to talk to a high profile outdoor node, which uses some better radio technology than Bluetooth or Wi-Fi, such as 802.11ah / Wi-Fi HaLow operating on 902-928 MHz? There's also [Reticulum](#) which is a well-developed mesh networking system, which I still have not devoted much time to study, other than to realize it's well-developed. I wish there would be an equivalent of Zero Retries to discuss alternative radio networking systems in depth, such as Meshtastic, Reticulum, and now Bitchat, Wi-Fi HaLow, and the many other such systems.

###

[VarAC V12 is here!](#)

Let's start with the BIG news in V12:

Introducing: Bi-Directional VarAC Email Gateway

Yes—it's finally here!

From day one, our vision for the VarAC Email Gateway was always bi-directional—but we knew we had to take it one step at a time. With V12, we're proud to say: the loop is now fully closed.

VarAC now empowers every user to operate their own bi-directional Email Gateway, allowing your station to seamlessly:

- Forward VMails from HF to Email, and
- Receive Emails and route them back into HF as VMails.

This milestone was made possible by integrating not only with SMTP (which we've used until now for sending emails), but now also with IMAP. In simple terms, VarAC can now retrieve new emails from your inbox, convert them into VarAC VMails, and place them as "Parked/Outgoing" messages in your VMailBox, ready to be transmitted over HF.

And yes—this works even with free email providers like Gmail (with proper setup). The gateway just became truly complete.

There are several other significant new features of VarAC V12, as well as a slew of bug fixes, but the bidirectional email gateway is a big deal. This may well bring Amateur Radio / Internet email interoperability "to the masses" and show just how relevant Amateur Radio can be in this very real and relevant "real world use case".

Leave a comment

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Comments Summary From Previous Issue

Comments from Zero Retries 0209

- Discussion of Tailscale (recommendation).
- Discussion of the importance of modulation index.

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Zero Retries Boilerplate

The [Zero Retries Store](#) is now open for business with quality Zero Retries branded merchandise and items being retired from Steve's N8GNJ Labs.

These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham ([The City of Subdued Excitement](#)), Washington, USA, and linked to the Internet via [Starlink Satellite Internet Access](#).

See the **Zero Retries Boilerplate** page for significant acknowledgements and other information relevant to Zero Retries. For new readers of Zero Retries, that page, and the **About Zero Retries** page has useful information to check out.

My ongoing *Thanks* to:

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Jack Stroh, Late Night Assistant Editor Emeritus

Shrek Stroh, Late Night Assistant Editor In training

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*Keywords in **Bold** are regular mentions in each issue.*
